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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:
MICHEL MAGNE, ET AL.	: EXAMINER: WEDDLE, ALEXANDER
SERIAL NO: 10/510,226	:
FILED: MARCH 18, 2005	: GROUP ART UNIT: 1792
FOR: METHOD FOR TREATING LIGNOCELLULOSIC MATERIALS, IN PARTICULAR WOOD AND MATERIAL OBTAINED BY SAID METHOD	:

DECLARATION UNDER 37 C.F.R. §1.132

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

I, Silham EL KASMI, hereby declare:

1. In 19994, I received a French Baccaluréat C (High School Degree). In september 1999, I received a Master's degree from ENSTIB (Ecole Nationale Supérieure des Industries du Bois), in the field of wood. My studies were directed to the subject of wood Stain and wood chemistry.

2. I have been employed by Lapeyre from 1999 to the present.

3. From 1999 to 2001, I worked as a Project Manager for Lapeyre in the area of research and development directed to wood.

4. From 2001 to the end of 2003, I worked as manager of stain, gluing and chemistry department.

5. from 2004 to the present, I have been the Director of the Research and Development Department at Lapeyre. My duties as the Director of the R & D Department include responsibility for activities relating to wood in general.

6. I am a named inventor in the above-captioned patent application, of which Lapeyre is the assignee. I am also familiar with and have worked with the products and methods described in the above-captioned patent application.

7. I am familiar with Li et al., "Chemical modification of wood by anhydrides without solvents or catalysts" ("Li"), Vaca-Garcia et al., "Cellulose esterification with fatty acids and acetic anhydride in lithium chloride/N,N-dimethylacetamide medium" ("Vaca-Garcia"), EP 0 190 576 A1 to Mahieu ("Mahieu") and Dawson et al., "Reactivity of radiate pine sape wood toward carboxylic acid anhydrides" ("Dawson"), which I understand have been cited against the above-captioned patent application.

7. I and/or those under my direct supervision and control carried out the following experimentation.

a. A first sample piece of wood (10 cm x 10 cm x 10 cm) was immersed in acetic/octanoic anhydride (a mixed anhydride as provided in claim 1 of the above-captioned patent application) and heated at 140°C for 1 hour. Subsequently, the first sample piece of wood was removed and dried in a fan oven. Finally, the first sample piece of wood was cut into two equal pieces (cut line along the median of one face).

b. A second sample piece of wood (10 cm x 10 cm x 10 cm) was immersed in acetic anhydride (an anhydride as employed in the method disclosed in Li) and heated at 140°C for 1 hour. Subsequently, the second sample piece of wood was removed and dried in a fan oven. Finally, the second sample piece of wood was cut into two equal pieces (cut line along the median of one face).

c. The first and second sample pieces of wood were evaluated for impregnation capability by measurement of the thickness of anhydride penetration into the respective sample pieces of wood. The results of such measurement are shown in the TABLE below.

d. The first and second sample pieces of wood were evaluated for wettability by measuring the contact angle of a drop of water deposited onto the outer and inner faces of the respective sample pieces of wood (after the sample pieces of wood have been cut) with a goniometer. A high contact angle indicates low wettability (i.e., the wood is resistant to water damage). Wettability is evaluated both before and after subjecting the respective sample pieces of wood accelerated ageing conditions. Accelerated aging conditions were provided by immersing the respective sample pieces of wood in distilled water for 12 minutes, exposing the respective sample pieces of wood to ambient air for 27 minutes, exposing the respective sample pieces of wood to UV light for 24 minutes, and exposing the respective sample pieces of wood to ambient air for 27 minutes. The above-described cycle was repeated for 6 weeks. The results of the evaluation of wettability are shown in the TABLE below.

TABLE

Treatment Agent	**acetic/octanoic anhydride**	**acetic anhydride**
Penetration thickness (mm)	50	2
Contact angle (°)		
before ageing		
outer face	89	46
inner face	78	18
after ageing		
outer face	82	32
inner face	76	18

8. As can be seen from the results in the TABLE above, employing the mixed anhydride as a treatment agent provides superior penetration in comparison with employing acetic anhydride as a treatment agent. That is, the mixed anhydride treats wood much more efficiently than acetic anhydride: the mixed anhydride provides a full, deep treatment (50 mm penetration), while acetic anhydride penetrates only the surface (2 mm penetration). Based on my expertise and experience, the greater penetration by the mixed anhydride employed in the process of claim 1 of the above-captioned patent application in comparison with acetic anhydride as employed in the method of Li is an unexpected result.

9. As can be seen from the results in the TABLE above, employing the mixed anhydride as a treatment agent provides much lower wettability in comparison with employing acetic anhydride as a treatment agent. The outer face of the sample treated with the mixed anhydride exhibited a lower wettability (89° contact angle) in comparison to the outer face of the sample treated with acetic anhydride (46° contact angle – a nearly two-fold increase in wettability). The inner face of the sample treated with the mixed anhydride exhibited a lower wettability (78° contact angle) in comparison to the inner face of the sample treated with acetic anhydride (18° - a nearly two-fold increase in wettability). Due, at least in part, to the differing penetrations of the mixed anhydride and acetic anhydride, the sample treated with the mixed anhydride showed similar (low) wettability for the outer and inner faces, while the sample treated with acetic anhydride showed much higher wettability for the inner face in comparison with the outer face.

The sample treated with the mixed anhydride substantially retains its wettability on both the inner and outer faces after ageing. By contrast, the sample treated with acetic anhydride exhibits increased wettability on the outer face after aging. The sample treated with the mixed anhydride is more resistant to ageing than the sample treated with acetic anhydride.

Based on my expertise and experience, the lower wettability and higher stability exhibited by the sample treated with the mixed anhydride employed in the process of claim 1 of the above-captioned patent application in comparison with acetic anhydride as employed in the method of Li is an unexpected result.

9. All statements made herein of my own knowledge are true, and all statements made on information and belief are believed to be true; these statements were made with the knowledge that willful false statements are punishable by fine and/or imprisonment under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of this application or any patent issuing therefrom.

Date: 11/12/09

Silham EL KASMI